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KENYON & KENYON 333 W. SAN CARLOS STREET SUITE 600 SAN JOSE, CA 95110-2731			WOOD, WILLIAM H	
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			2193	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/675,915

Applicant(s)

BRONICKI ET AL.

Examiner

William H. Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-29 are pending and have been examined.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation “defining each of said flow rules as connecting a pair of said slots, data models and sub data models, wherein said flow rules define both data flow and process flow” (claim 1) and “wherein said process models and data models and slots and flow rules are arranged in a structural hierarchy conforming to a set of rigid composition rules, ensuring the language system is rich enough and precise enough for computer to execute an application model defined in said modeling language” (claim 2) and “defining each of said composite process models as a construction of at least one sub process modes, slots, data models and flow rules” (claim 27) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2, 17, 21, 24 and 27 recite the relative terminology, "substantially", which renders the claim indefinite. Claim 15 recites the relative terminology, "virtually", which renders the claim indefinite. Claim 2 also rejected for reciting "rich enough and precise enough", which renders the claim indefinite.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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5. Claims 1-13 and 21-23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. Furthermore, lack of hardware renders claim not tangible. For example, claim 1 recites steps of classifying and defining, none of which requires hardware or a tangible embodiment. Claim 21 is simply software.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-12 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by **Williams** (USPN 5,850,548).

Claim 1

Williams disclosed a modeling method for defining software applications using a visualizable computer executable modeling language, said method comprising:

defining each of the software applications as a hierarchy of process models, slots, data models, and flow rules (*figures 3A-4G; column 2, lines 20-39*);

classifying some of said process models and said data models as atomic;
classifying all other process models and data models as composite (*figures 3A-4G; column 2, lines 20-39*);
defining each of said composite process models as a construction of at least one of sub process models, slots, data models, and flow rules (*figures 3A-4G; column 2, lines 20-39*);
defining each of said composite data models as a construction of at least one sub data model (*figures 3A-4G; column 2, lines 20-39*); and
defining each of said flow rules as connecting a pair of said slots, data models and sub data models, wherein said flow rules define both data flow and process flow (*figures 3A-4G; column 2, lines 20-39*).

Claim 2

Williams disclosed a visualizable computer executable modeling language system operating in accordance with the method of claim 1, for substantially complete definition of the software applications, said system comprising:

process models, each of which may contain any number of sub process models, slots, data models and flow rules (*figures 3A-4G; column 2, lines 20-39*);
data models, each of which may contain any number of sub data models (*figures 3A-4G; column 2, lines 20-39*); and

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flow rules, each of which connecting a pair o said slots, data models and sub data models, thereby defining data flow and process flow (*figures 3A-4G; column 2, lines 20-39*);

wherein said process models and data models and slots and flow rules are arranged in a structural hierarchy conforming to a set of rigid composition rules, ensuring the language system is rich enough and precise enough for computer to execute an application model defined in said modeling language (*figures 3A-4G; column 2, lines 20-39*).

Claim 3

Williams disclosed the modeling language system of claim 2, further comprising at least one visual representation (*figures 3A-4G; column 2, lines 20-39*).

Claim 4

Williams disclosed the modeling language system of claim 3, wherein said visual representation comprises:

process diagrams comprising various two dimensional shapes representing said process models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*);

sub process diagrams comprising various two dimensional shapes contained within said process diagrams, representing said sub process models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*);

slot diagrams comprising various two dimensional shapes situated on the edges of said process diagrams and said sub process diagrams, representing said slots (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*);

data trees comprising hierarchical tree structures contained within said process diagrams, representing said data models and said sub data models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*); and

flow arrows comprising arrows connecting pairs of said slot diagrams, said data trees and sub-tree of said data trees, said arrows representing said flow rules (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*).

Claim 5

Williams disclosed the modeling language system of claim 2, wherein each of said slots is further defined as having one of the following classifications:

input slot (*figures 3A and 3B*); and

output slot (exit) (*figures 3A and 3B*);

and further defining each of said input slots as having one of the following sub-classifications:

synchronous input slot (trigger) (*figures 3A and 3B; and figure 18, event*); and

asynchronous input slot (*figures 3A and 3B; and figure 18, event*);

and further defining each of said triggers as having one of the following sub-classifications:

mandatory (*figures 3A and 3B; and figure 18, event*); and

optional (*figures 3A and 3B; and figure 18, event*);

and further defining some of said exits as having the sub-classification terminating (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*).

Claim 6

Williams disclosed the modeling language system of claim 2, wherein each of said slots is further defined as having one of the following classifications:

input slot; and

output slot (exit);

and further defining each of said flow rules contained in said composite process models as connecting one source and one target;

and further defining the source of each of said flow rules to be one of the following:

an input slot of said composite process model;

an exit of a sub process model of said composite process model;

a data model of said composite process model; and

a sub data model of a data model of said composite process model;

and further defining the target of each of said flow rules to be one of the following:

an exit of said composite process model;

an input slot of a sub process model of said composite process model;

a data model of said composite process model; and

a sub data model of a data model of said composite process model.

(figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11; for all above)

Claim 7

Williams disclosed the modeling language system of claim 2, wherein:

each of said process models may further contain a reference to a database table
(process table);

at least some of the sub data models of data models of said process model are marked
as interesting fields; and

each of said interesting fields further contains a reference to a column of said process
table.

*(in addition to figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9,
line 11; note column 13, line 44 to column 23, line 17; for all above)*

Claim 8

Williams disclosed the modeling language system of claim 7, wherein:

a selection condition of an SQL query (addressing clause) may be attached to an input
slot of said process model to select matching instances of said process model each
time data is to be received by said instances through said input slot;

said addressing clause is defined in terms of a matching condition between the interesting fields of said process model and the data model of said data to be received through said input slot (*column 12, line 60 to column 13, line 10*).

Claim 9

Williams disclosed the modeling language system of claim 2, wherein each of said process models may further contain a reference to a computer code implementing the function of said process model (*figure 9A*).

Claim 10

Williams disclosed the modeling language system of claim 2, wherein:

each of said composite data models is composed of said sub data models by one of the following structure means:

concatenation;

collection; and

selection,

each of said sub data models having a classification as one of the following:

mandatory; and

optional;

each of said sub data models may further be marked as recurring, with a further optional indication of minimal and maximal number of occurrences;

each of said data models may further contain constraints on the data it defines,
comprising:
at least one of the following:
legal characters; and
minimal and maximal length;
each of said data models may further comprise a set of legal values and an initial value;
and
each of said data models may further comprise formatting directives.

*(figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11; for all
above)*

Claim 11

Williams disclosed a modeling system for defining software applications using the
visualizable computer executable modeling language system of claim 2, wherein
enabling users to create, display, modify and test, in an integrated workspace, models
of said modeling language, in accordance with the rules of said modeling language
system *(figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line
42)*, wherein:

said modeling system comprises a graphical user interface tool (visual modeling
tool) for creating, displaying, modifying and testing models of said modeling language in
an integrated workspace, such that users of said modeling tool create and edit said

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models using various graphical user interface (GUI) operations (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 42*).

Claim 12

Williams disclosed the modeling system of claim 11, wherein each of said process models and said data models is further defined as having one of the following classifications:

dependent model: only exists as sub model of a specific parent model (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*); and

reusable model: may be reused as a sub model of multiple parent models, wherein each of said reusable models is assigned a unique identifier (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11*).

Claim 14

Williams disclosed the modeling system of claim 11, further comprising at least the following editing capabilities:

selection of editing operations from menus;

adding components to said models through dragging of models from palettes of existing models; and

modifying attributes of said models and said components of said models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 42; for all above*).

Claim 15

Williams disclosed the modeling system of claim 11, wherein said workspace comprises a virtually infinite drawing board for displaying hierarchies of two dimensional visual diagrams, each representing a corresponding said hierarchy of models, and wherein said users are able to zoom in an out from a currently displayed part of said hierarchy of diagrams, enabling the display of the details of said model and any sub-model thereof at any desired level of said hierarchy of models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 42*).

Claim 16

Williams disclosed the modeling system o claim 11, further comprising:
a software program (runtime engine) to execute models defined in said modeling language; and
a visual debugger for testing and debugging said models, wherein:
said runtime engine, as it executes said models, produces records listing the details of said execution (trace events);
said trace events are used to record and store the history of said execution; and
said visual debugger uses said stored trace events to display the current status of instances of processes, including the content of their data, as well as the processing steps that have led to said current status (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 9, line 11; for all above*).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Williams** (USPN 5,850,548).

Claim 13

Williams disclosed the modeling system of claim 11, wherein models are formally represented as one of the following:

structured database records; and

any other equivalent binary representation,

and wherein a repository of said representations of said models, arranged as a hierarchy of packages and sub-packages (knowledge base), is used to maintain libraries of said models, and wherein the modeling system displays said models whose said representations are stored in said knowledge base, stores in said knowledge base said representations of new said models that are defined by the users of the modeling system, and updates said representations of said models in said knowledge base according to modifications made to said models by said users (*column 2, lines 20-39; and column 5, line 31 to column 13, line 42*).

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Williams did not explicitly state XML documents. Official Notice is taken that it was known at the time of invention to utilize XML. It would have been obvious to one of ordinary skill in the art at the time of invention to implement the visual modeling system of **Williams** with XML for storage and documents. This implementation would have been obvious because one of ordinary skill in the art would be motivated to make use of standard technology which is simple and quick to implement (XML).

10. Claims 17-20, 24-25 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Williams** (USPN 5,850,548) in view of **Parr et al.** (US 2002/0095653).

Claim 17

Williams disclosed each of the applications is defined by a single said process model and a hierarchy of its sub-models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 42*). **Williams** did not explicitly state the runtime engine executes the application exactly as defined by said single process model and said hierarchy of its sub-models, thus substantially eliminating the need for writing code in any programming language to implement the application. **Parr** demonstrated that it was known at the time of invention to use runtime engines to execute visual programs (page 1, paragraph 0009 to page 2, paragraph 0038). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the visual model of **Williams** with runtime engine as found in **Parr's** teaching. This implementation would

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have been obvious because one of ordinary skill in the art would be motivated to accessibility to a project as long as possible, up to compilation (**Parr**: page 1, paragraphs 0009-0010).

Claim 18

Williams and **Parr** disclosed the runtime engine of claim 17, further comprising: active models comprising objects responsible for representing and enacting the definitions and rules embodied in said models, where there is an active model corresponding to each of said process models and data models; runtime objects comprising objects containing the runtime state of instances of said process models and data models, where there may be at any time any number of runtime objects instantiated from each of said process models and data models by the corresponding said active model; and a model loader comprising an object responsible for loading said models from their formal representations stored in a repository, converting said loaded models to corresponding said active models, and caching said active models (**Williams**: figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 41; for all above).

Claim 19

Williams and **Parr** disclosed the runtime engine of claim 17, wherein the runtime engine executes each of said models as a series of processing steps, wherein:

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each of said processing steps is triggered by the receipt of an external input;
the runtime engine invokes at least one instance of at least one relevant process model to handle said received input, and executes sub-processes of said invoked processes as defined by the relevant said flow rules; and
a processing step ends when any further activities to be performed depend on the receipt of other external inputs (*Williams: figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 41; for all above*).

Claim 20

Williams and **Parr** disclosed the runtime engine of claim 17, wherein:

the runtime engine executes each of said models as a series of processing steps by invoking at least one instance of said process models;
the full state of each of said at least one process instances is made persistent at the end of each said processing step;
execution of each of said at least one process instance can resume from its stored state at any relevant time; and
a repository of all said at least one process instances is available for queries and retrieval by the runtime engine while executing said models or by external applications (*Williams: figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 41; for all above*).

Claim 24

Williams and **Parr** disclosed a method for substantially overcoming the need to write computer source code in order to develop software applications, comprising:
creating models of the applications in a visualizable computer executable modeling language system, using a visual modeling tool, comprising:
defining each of said software applications as a hierarchy of process models, slots, data models, and flow rules;
classifying some of said process models and said data models as atomic;
classifying some all other process models and data models as composite;
defining each of said composite process models as a construction of at least one of sub process models, slots, data models and flow rules;
defining each of said composite data models as a construction of at least one sub data model; and
defining each of said flow rules as connecting a pair of said slots, data models and sub data models, wherein said flow rules define both data flow and process flow; and
executing the logic defined by said created models.

(as disclosed above under claims 1, 2 and 17).

Claim 25

Williams and **Parr** disclosed the method of claim 24, wherein the execution of the logic defined by said models is made by a dedicated computer program (runtime engine) *(as disclosed above under claims 1, 2 and 17).*

Claim 27

Williams and Parr disclosed a software development platform for substantially overcoming the need to write computer source code in order to develop software applications, comprising:

a visualizable computer executable modeling language of the definition of software solutions, said definition comprising:

defining each of said software solutions as a hierarchy of process models, slots, data models, and flow rules;

classifying some of said process models and said data models as atomic;

classifying all other process models and data models as composite;

defining each of said composite process models as a construction of at least one sub process modes, slots, data models and flow rules;

defining each of said composite data models as a construction of at least one sub data model; and

defining each of said flow rules as connecting a pair of said slots, data models and sub data models, wherein said flow rules define both data flow and process flow;

a visual modeling tool for defining said software solutions by at least one user as said hierarchies of models in said modeling language; and

a dedicated computer program to automatically execute said software solutions according to the logic defined by said hierarchies of models.

(as disclosed above under claims 1, 2 and 17)

Claim 28

Williams and **Parr** disclosed the software development platform of claim 27, wherein said dedicated computer program is a runtime engine that automatically executes said software solutions at runtime, according to the logic defined by said hierarchies of models.

(as disclosed above under claims 1, 2 and 17)

11. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Williams** (USPN 5,850,548) in view of **Goodwin** et al. (USPN 6,199,195).

Claim 21

Williams disclosed each of the applications is defined by a single said process model and a hierarchy of its sub-models (*figures 3A-4G; column 2, lines 20-39; and column 5, line 31 to column 13, line 42*). **Williams** did not explicitly state the code generator produces code in a general purpose programming language implementing the application exactly as defined by said single process model and said hierarchy of its sub-models, thus substantially eliminating the need for writing code in any programming language to implement the application. **Goodwin** demonstrated that it was known at the time of invention to use models to generate code (figures 2 and 3). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the visual modeling system of **Williams** with code generation as found in **Goodwin's**

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teaching. This implementation would have been obvious because one of ordinary skill in the art would be motivated to allow for rapid development and integration of components and services (**Goodwin**: column 8, lines 20-31).

Claim 22

Williams and **Goodwin** disclosed the software program of claim 21, wherein said general purpose programming language is Java (**Goodwin**: figure 4).

Claim 23

Williams and **Goodwin** disclosed the software program of claim 21, wherein said general purpose programming language is C++ (**Goodwin**: column 12, lines 56).

12. Claims 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Williams** (USPN 5,850,548) in view of **Parr et al.** (US 2002/0095653) in further view of **Goodwin et al.** (USPN 6,199,195).

Claim 26

Williams, **Parr** and **Goodwin** disclosed the method of claim 24, wherein the implementation of the logic defined by said models is made by the code of a software program in a general purpose programming language, which is generated by dedicated computer program (code generator) (as above for claim 21, in view of **Williams** and **Parr** in claim 24).

Claim 29

Williams, Parr and Goodwin disclosed the software development platform of claim 27, wherein the dedicated computer program is a code generator that automatically generates the code of a software program in a general purpose programming language implementing the logic defined by said hierarchies of models (*as above for claim 21, in view of Williams and Parr in claim 27*).

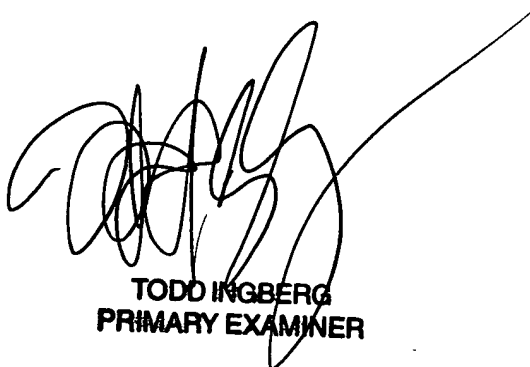
Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

William H. Wood
March 19, 2005



TODD INGBERG
PRIMARY EXAMINER